

Application No.: 09/271,584

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Docket No.: 529642000200

In the Claims

Please amend the claims as follows:

Claim 1 (Currently Amended): A transgenic plant comprising a recombinant nucleic acid molecule encoding a polypeptide having Na⁺/H⁺ transporter activity that provides increased salt tolerance in a cell, wherein said nucleic acid molecule is selected from the group consisting of:

(a) a nucleic acid molecule of the coding strand shown in SEQ ID NO:1, or a complement thereof;

(b) a nucleic acid molecule encoding ~~the same amino acid sequence~~ SEQ ID NO:2 as ~~encoded by the nucleotide sequence of (a);~~

(c) a nucleic acid molecule that specifically hybridizes ~~under highly stringent conditions~~ to the sequence set forth in SEQ ID NO:1 or the complement of the sequence set forth in SEQ ID NO:1 under conditions that include at least one wash in 0.1xSSC, 0.1% SDS, at 65° C for fifteen minutes; and

(d) a nucleic acid molecule encoding an amino acid sequence at least 95% identical to the amino acid sequence shown in SEQ ID NO:2 ~~a PNHX transporter polypeptide that specifically hybridizes under moderately stringent conditions to the sequence set forth in SEQ ID NO:1 or the complement of the sequence set forth in SEQ ID NO:1.~~

Claims 2-4 (Canceled).

Claim 5 (Currently Amended): The transgenic plant of claim 1, wherein the ~~PNHX transporter polypeptide~~ having Na⁺/H⁺ transporter activity comprises an AtNHX transporter polypeptide ~~having Na⁺/H⁺ transporter activity that provides increased salt tolerance in a cell.~~

Claim 6 (Canceled).

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Claim 7 (Previously Amended): A transgenic plant comprising a recombinant AtNHX nucleic acid molecule isolated from *Arabidopsis thaliana* encoding a transporter polypeptide having Na⁺/H⁺ transporter activity that provides increased salt tolerance in a cell.

Claim 8 (Previously Amended): The transgenic plant of claim 1, further comprising a constitutive promoter sequence or an inducible promoter sequence, operatively linked so that the promoter provides transcription of the recombinant nucleic acid molecule in the plant.

Claim 9 (Canceled).

Claim 10 (Previously Amended): The transgenic plant of claim 1, wherein the recombinant nucleic acid molecule is chemically synthesized.

Claim 11 (Previously Amended): The transgenic plant of claim 1, wherein the recombinant nucleic acid molecule is isolated from *Arabidopsis thaliana*.

Claim 12 (Currently Amended): The transgenic plant of claim 1 wherein the ~~PNHX~~ transporter polypeptide having Na⁺/H⁺ transporter activity extrudes monovalent cations out of the cytosol of a first cell of said plant transformed with said recombinant nucleic acid molecule to provide the first cell with increased salt tolerance relative to a second non-transformed cell of a plant of the same variety as said transgenic plant, wherein the monovalent cations are selected from at least one of the group consisting of sodium, lithium and potassium.

Claim 13 (Canceled).

Claim 14 (Previously Amended): The transgenic plant of claim 12 wherein the monovalent cations are extruded into a vacuole or into the extracellular space of said plant.

Claims 15-17 (Canceled).

Claim 18 (Currently Amended): An expression transgene comprising a recombinant nucleic acid molecule encoding a polypeptide having Na⁺/H⁺ transporter activity that provides increased

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salt tolerance in a cell operably linked to a promoter selected from the group consisting of a super promoter, a 35S promoter of cauliflower mosaic virus, a drought-inducible promoter, an ABA-inducible promoter, a heat shock-inducible promoter, a salt-inducible promoter, a copper-inducible promoter, a steroid-inducible promoter and a tissue-specific promoter, wherein said nucleic acid molecule is selected from the group consisting of:

(a) a nucleic acid molecule of the coding strand shown in SEQ ID NO:1, or a complement thereof;

(b) a nucleic acid molecule encoding ~~the same amino acid sequence~~ SEQ ID NO:2 as encoded by the nucleotide sequence of (a);

(c) a nucleic acid molecule that specifically hybridizes under ~~highly stringent conditions~~ to the sequence set forth in SEQ ID NO:1 or the complement of the sequence set forth in SEQ ID NO:1 under conditions that include at least one wash in 0.1xSSC, 0.1% SDS, at 65° C for fifteen minutes; and

(d) a nucleic acid molecule encoding an amino acid sequence at least 95% identical to the amino acid sequence shown in SEQ ID NO:2 a PNHX transporter polypeptide that specifically hybridizes under moderately stringent conditions to the sequence set forth in SEQ ID NO:1 or the complement of the sequence set forth in SEQ ID NO:1.

Claim 19 (Previously Amended): A plant cell comprising the expression transgene of claim 18, or progeny of the plant cell.

Claim 20 (Canceled).

Claim 21 (Previously Amended): A plant, a plant part, a seed, a plant cell or progeny thereof, wherein the plant, plant part, seed, plant cell, or progeny thereof comprise the expression transgene of claim 18.

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Claim 22 (Original): The plant part of claim 21, comprising all or part of a leaf, a flower, a stem, a root or a tuber.

Claim 23 (Original): The plant, plant part, seed or plant cell of claim 21, wherein the plant, plant part, seed or plant cell is of a species selected from the group consisting of alfalfa, almond, apple, apricot, arabidopsis, artichoke, atriplex, avocado, barley, beet, birch, brassica, cabbage, cacao, cantaloupe, carnations, castorbean, cauliflower, celery, clover, coffee, corn, cotton, cucumber, garlic, grape, grapefruit, hemp, hops, lettuce, maple, melon, mustard, oak, oat, olive, onion, orange, pea, peach, pear, pepper, pine, plum, poplar, potato, prune, radish, rape, rice, roses, rye, salicornia sorghum, soybean, spinach, squash, strawberries, sunflower, sweet corn, tobacco, tomato and wheat.

Claim 24 (Original): The plant, plant part, seed or plant cell of claim 21, wherein the plant comprises a dicot plant.

Claim 25 (Original): The plant, plant part, seed or plant cell of claim 21, wherein the plant comprises a monocot plant.

Claim 26 (Previously Amended): A method for producing a recombinant plant cell that expresses a nucleic acid molecule, the method comprising introducing into the plant cell the expression transgene of claim 18.

Claim 27 (Previously Amended): A method of producing a genetically transformed plant which expresses PNHX transporter polypeptide, comprising regenerating a genetically transformed plant from the plant cell, seed or plant part of claim 21.

Claim 28 (Previously Amended): The method of claim 26, wherein the genome of the plant cell also comprises a functional PNHX gene.

Claim 29 (Previously Amended): The method of claim 26, wherein the genome of the plant cell does not comprise a functional PNHX gene.

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Claim 30 (Original): A transgenic plant produced according to the method of claim 27.

Claim 31 (Currently Amended): A method for expressing a PNHX transporter polypeptide in the plant cell of claim 19, the method comprising culturing the plant cell under conditions suitable for gene expression, wherein the PNHX transporter polypeptide is expressed.

Claim 32 (Currently Amended): A method for producing a transgenic plant that expresses elevated levels of PNHX transporter polypeptide relative to a non-transgenic plant, comprising transforming a plant with the expression transgene of claim 18 such that the PNHX transporter polypeptide is expressed at elevated levels in the plant relative to a plant that has not been transformed with the expression transgene.

Claims 33-52 (Canceled).

Claim 53 (Currently Amended): A method of producing a genetically transformed plant comprising:

(a) cloning or synthesizing a nucleic acid molecule encoding a polypeptide having Na⁺/H⁺ transporter activity that provides increased salt tolerance in a cell selected from the group consisting of: (i) a nucleic acid molecule of the coding strand shown in SEQ ID NO:1, or a complement thereof; (ii) a nucleic acid molecule encoding ~~the same amino acid sequence~~ SEQ ID NO:2 as encoded by the nucleotide sequence of (a); (iii) a nucleic acid molecule that specifically hybridizes ~~under highly stringent conditions~~ to the sequence set forth in SEQ ID NO:1 or the complement of the sequence set forth in SEQ ID NO:1 under conditions that include at least one wash in 0.1xSSC, 0.1% SDS, at 65° C for fifteen minutes; and (iv) a nucleic acid molecule encoding an amino acid sequence at least 95% identical to the amino acid sequence shown in SEQ ID NO:2 a ~~PNHX transporter polypeptide that specifically hybridizes under moderately stringent conditions to the sequence set forth in SEQ ID NO:1 or the complement of the sequence set forth in SEQ ID NO:1, wherein said nucleic acid encodes a polypeptide capable of providing salt tolerance to a plant~~ cloning or synthesizing a nucleic acid molecule that specifically hybridizes under highly stringent conditions to the sequence set forth in SEQ ID NO:1 or the complement of the sequence set forth in

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~~SEQ ID NO:1~~, wherein said nucleic acid molecule encodes a polypeptide capable of providing salt tolerance to a plant;

(b) inserting the nucleic acid molecule in a vector so that the nucleic acid molecule is operably linked to a promoter;

(c) inserting the vector into a plant cell or plant seed;

(d) regenerating the plant from the plant cell or plant seed, wherein salt tolerance in the plant is increased compared to a wild type plant.

Claim 54 (Previously Added): A transgenic plant produced according to the method of claim 53.

Claim 55 (Canceled).

Claim 56 (Previously Amended): An isolated nucleic acid molecule encoding a TNH_X transporter polypeptide or fragment thereof or a PNH_X transporter polypeptide or a fragment thereof, wherein said polypeptide or fragment thereof has Na⁺/H⁺ transporter activity that provides increased salt tolerance in a cell, wherein said nucleic acid comprises SEQ ID NO:1.

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